0059296

SAF-B00-030
100 F Area - Full Protocol
FINAL DATA PACKAGE

FAX RESULTS TO:

Mike Stankovich N/A
INITIAL/DATE

VERIFICATION OF CLIENT RECEIPT:

Phone or CC:Mail to Mike Stankovich N/A
INITIAL/DATE

COMPLETE COPY OF DATA PACKAGE TO:

Mike Stankovich X9-10 BL 1/29/03
INITIAL/DATE

Jeanette Duncan BL 1/29/03
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE FAX COVER SHEET)

SDG (W03926) SAF-B00-030

Rad only Chem only X Rad & Chem

X Complete Partial

Waste Site: 116-F-1 Shallow Zone

Analytical Data Package Prepared For

Bechtel Hanford

Radiochemical Analysis By

STL Richland

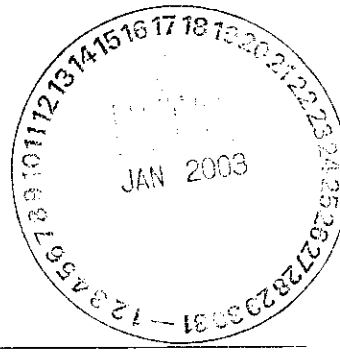
2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains 39 Pages

Report No.: 21506

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
W03926	B00-030	J00C11	J2L120184-1	FEN0R1AG	9FEN0R10	2346507
		J00C11	J2L120184-1	FEN0R1AF	9FEN0R10	2346509
		J00C11	J2L120184-1	FEN0R2AA	9FEN0R20	3008420



SEVERN TRENT STL

CERTIFICATE OF ANALYSIS

Bechtel Hanford, Inc.
3350 George Washington Way
Richland, WA 99352

January 16, 2003

Attention: Joan Kessner

SAF Number	:	B00-030
Date SDG Closed	:	December 12, 2002
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W03926
Data Deliverable	:	21-Day / Summary

I. Introduction

On December 12, 2002, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID numbers to correspond with the Bechtel Hanford, Inc. (BHI) specific IDs:

STLR ID#	BHI ID#	MATRIX	DATE OF RECEIPT
FEN0R	J00C11	SOIL	12/12/02

The sample was submitted for Cr+6, total strontium, Ni-63, C-14, and gamma analysis. On December 20, 2002, the client wanted a stop work on the total strontium, Ni-63 and gamma analysis. On January 9, 2003, the client wanted work to continue on the gamma analysis.

II. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Liquid Scintillation Counting
Carbon-14 by method RICH-RC-5022
Gamma Spectroscopy
Gamma Spec by method RICH-RC-5017
Chemical Analyses
Chromium Hex by EPA method 7196A

III. Quality Control

The analytical results for each analysis performed under SDG W03926 include a minimum of one Laboratory Control Sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

IV. Comments

Liquid Scintillation Counting
Carbon-14 by method RICH-RC-5022:
The LCS, batch blank, sample duplicate (J00C11), and sample results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RICH-RC-5017:
The LCS, batch blank, sample duplicate (J00C11), and sample results are within contractual requirements.

Chemical Analyses
Chromium Hex by EPA method 7196A:
The LCS, batch blank, sample duplicate (J00C11), matrix spike (J00C11), color (J00C11 PbCrO4) spike, and sample results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

Barbara M. Gillespie
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**STL Richland's SOP number**
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) u_c - ***Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c *the combined uncertainty.* The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

STL Richland STLRL

Ordered by Client Sample ID, Batch No.

Date: 17-Jan-03

Report No. : 21506

SDG No: W03926

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC|MDA	RER
J00C11	FEN0R1AG	C-14	1.70E-02 +- 1.4E-01	U	pCi/g	100.00%	3.16E-01	
J00C11	FEN0R1AF	CO-60	1.43E-02 +- 1.3E-02	U	pCi/g		2.40E-02	
		CS-137	4.15E-02 +- 1.7E-02		pCi/g		2.10E-02	
		EU-152	-1.53E-02 +- 3.2E-02	U	pCi/g		5.43E-02	
		EU-154	3.85E-03 +- 3.8E-02	U	pCi/g		6.56E-02	
		EU-155	8.24E-02 +- 3.9E-02	U	pCi/g		6.46E-02	
J00C11	FEN0R2AA	HEXCHROME	2.38E-02 +- 0.0E+00	U	mg/kg	N/A	8.00E-02	
J00C11 DUP	FEN0R1AH	C-14	2.28E-02 +- 1.4E-01	U	pCi/g	100.00%	3.16E-01	0.1
J00C11 DUP	FEN0R1AL	CO-60	2.76E-03 +- 1.2E-02	U	pCi/g		2.03E-02	1.3
		CS-137	8.21E-03 +- 1.2E-02	U	pCi/g		2.09E-02	3.2
		EU-152	-2.98E-02 +- 2.9E-02	U	pCi/g		4.68E-02	0.7
		EU-154	-4.09E-03 +- 3.5E-02	U	pCi/g		5.95E-02	0.3
		EU-155	4.49E-02 +- 3.1E-02	U	pCi/g		5.22E-02	1.5
J00C11 DUP	FEN0R2AP	HEXCHROME	2.37E-02 +- 0.0E+00	U	mg/kg	N/A	8.00E-02	

Number of Results: 14

QC Results Summary
STL Richland STLRL

Ordered by QC Type, Batch No.

Date: 17-Jan-03

Report No. : 21506

SDG No.: W03926

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC|MDA
BLANK QC	FEQH61AA	C-14	7.97E-02 +- 1.5E-01	U	pCi/g	100.00%			3.17E-01
BLANK QC	FEQH81AA	CO-60	-1.51E-03 +- 7.9E-03	U	pCi/g				1.36E-02
		CS-137	3.32E-04 +- 8.1E-03	U	pCi/g				1.40E-02
		EU-152	-1.61E-02 +- 2.1E-02	U	pCi/g				3.45E-02
		EU-154	6.14E-03 +- 2.3E-02	U	pCi/g				4.17E-02
		EU-155	-1.94E-03 +- 1.7E-02	U	pCi/g				2.83E-02
LCS	FEQH61AC	C-14	7.11E+00 +- 3.9E-01		pCi/g	100.00%	97.99%	0.0	3.17E-01
LCS	FEQH81AC	CS-137	2.91E-01 +- 5.3E-02		pCi/g		100.95%	0.0	3.93E-02
		K-40	2.02E+01 +- 2.6E+00		pCi/g		103.55%	0.0	3.09E-01
		RA-226	1.04E+00 +- 1.6E-01		pCi/g		90.19%	-0.1	6.04E-02
		RA-228	2.10E+00 +- 3.1E-01		pCi/g		111.95%	0.1	1.20E-01
		U-238DHP	1.87E+00 +- 8.6E-01		pCi/g		177.97%	0.8	8.67E-01
MATRIX SPI	FEN0R2AN	HEXCHROME	3.19E+01 +- 0.0E+00		mg/kg	N/A	76.08%	-0.2	8.00E-02
LCS	FFR5A1QS	HEXCHROME	3.64E+01 +- 0.0E+00		mg/kg	N/A	91.03%	-0.1	8.00E-02
BLANK QC	FFR5A1AB	HEXCHROME	2.26E-02 +- 0.0E+00	U	mg/kg	N/A			8.00E-02

Number of Results: 15

FORM I

SAMPLE RESULTS

Date: 17-Jan-03

Lab Name: STL Richland | **SDG:** W03926 | **Collection Date:** 12/11/2002 8:30:00 AM

Lot-Sample No.: J2L120184-1 | **Report No. :** 21506 | **Received Date:** 12/12/2002 10:30:00 AM

Client Sample ID: J00C11 | **COC No. :** B00-030-081 | **Matrix:** SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2346507	**Work Order:** FEN0R1AG			**Report DB ID:** 9FEN0R10								
C-14	1.70E-02	U	1.3E-01	1.4E-01	3.16E-01	pCi/g	100.00%	*0.05*	12/27/02 08:16 p		5.025	C14_LSC
						1.51E-01	5.00E+01	*0.24*			G	LSC3
Batch: 2346509	**Work Order:** FEN0R1AF			**Report DB ID:** 9FEN0R10								
CO-60	1.43E-02	U	1.3E-02	1.3E-02	2.40E-02	pCi/g		*0.59*	12/18/02 07:10 p		351.8	GAMMA_GS
							5.00E-02	*(2.1)*			g	GER4$1
CS-137	4.15E-02		1.7E-02	1.7E-02	2.10E-02	pCi/g		*(2.)*	12/18/02 07:10 p		351.8	GAMMA_GS
							1.00E-01	*(4.9)*			g	GER4$1
EU-152	-1.53E-02	U	3.2E-02	3.2E-02	5.43E-02	pCi/g		*-0.28*	12/18/02 07:10 p		351.8	GAMMA_GS
							1.00E-01	*-0.95*			g	GER4$1
EU-154	3.85E-03	U	3.8E-02	3.8E-02	6.56E-02	pCi/g		*0.06*	12/18/02 07:10 p		351.8	GAMMA_GS
							1.00E-01	*0.2*			g	GER4$1
EU-155	8.24E-02	U	3.9E-02	3.9E-02	6.46E-02	pCi/g		*(1.3)*	12/18/02 07:10 p		351.8	GAMMA_GS
							1.00E-01	*(4.3)*			g	GER4$1
Batch: 3008420	**Work Order:** FEN0R2AA			**Report DB ID:** 9FEN0R20								
HEXCHROME	2.38E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	*0.3*	1/11/03		2.5	EPA7196
								N/A			G	

Number of Results: 7

Comments:

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 17-Jan-03

DUPLICATE RESULTS

Lab Name:	STL Richland	**SDG:**	W03926	**Collection Date:**	12/11/2002 8:30:00 AM
Lot-Sample No.:	J2L120184-1	**Report No. :**	21506	**Received Date:**	12/12/2002 10:30:00 AM
Client Sample ID:	J00C11 DUP	**COC No. :**	B00-030-081	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2346507	**Work Order:** FEN0R1AH			**Report DB ID:** FEN0R1HR		**Orig Sa DB ID:** 9FEN0R10						
C-14	2.28E-02	U	1.3E-01	1.4E-01	3.16E-01	pCi/g	100.00%	0.07	12/27/02 08:58 p		5.024	C14_LSC
	1.70E-02	U RER	0.1			5.00E+01		0.32			G	LSC3
Batch: 2346509	**Work Order:** FEN0R1AL			**Report DB ID:** FEN0R1LR		**Orig Sa DB ID:** 9FEN0R10						
CO-60	2.76E-03	U	1.2E-02	1.2E-02	2.03E-02	pCi/g		0.14	12/19/02 07:00 a		351.8	GAMMA_GS
	1.43E-02	U RER	1.3			5.00E-02		0.47			g	GER8$1
CS-137	8.21E-03	U	1.2E-02	1.2E-02	2.09E-02	pCi/g		0.39	12/19/02 07:00 a		351.8	GAMMA_GS
	4.15E-02	U RER	3.2			1.00E-01		(1.4)			g	GER8$1
EU-152	-2.98E-02	U	2.9E-02	2.9E-02	4.68E-02	pCi/g		-0.64	12/19/02 07:00 a		351.8	GAMMA_GS
	-1.53E-02	U RER	0.7			1.00E-01		-(2.1)			g	GER8$1
EU-154	-4.09E-03	U	3.5E-02	3.5E-02	5.95E-02	pCi/g		-0.07	12/19/02 07:00 a		351.8	GAMMA_GS
	3.85E-03	U RER	0.3			1.00E-01		-0.23			g	GER8$1
EU-155	4.49E-02	U	3.1E-02	3.1E-02	5.22E-02	pCi/g		0.86	12/19/02 07:00 a		351.8	GAMMA_GS
	8.24E-02	U RER	1.5			1.00E-01		(2.9)			g	GER8$1
Batch: 3008420	**Work Order:** FEN0R2AP			**Report DB ID:** FEN0R2PR		**Orig Sa DB ID:** 9FEN0R20						
HEXCHROME	2.37E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	0.3	1/11/03		2.5	EPA7196
	2.38E-02	U RPD	0.0					N/A			G	

Number of Results: 7

Comments:

60

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

BLANK RESULTS

Date: 17-Jan-03

Lab Name: STL Richland **SDG:** W03926

Lot-Sample No.: J2L120000-507 **Report No. :** 21506 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2346507	**Work Order:** FEQH61AA			**Report DB ID:** FEQH61AB								
C-14	7.97E-02	U	1.3E-01	1.5E-01	3.17E-01	pCi/g	100.00%	0.25	12/27/02 06:52 p		5.0	C14_LSC
					1.52E-01	5.00E+01		(1.1)			G	LSC3

Number of Results: 1

Comments:

STL Richland

rptSTLRchBlank
V3.97 A97

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 17-Jan-03

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03926

Lot-Sample No.: J2L120000-509 **Report No. :** 21506 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 2346509	Work Order: FEQH81AA			Report DB ID: FEQH81AX								
CO-60	-1.51E-03	U	7.9E-03	7.9E-03	1.36E-02	pCi/g		-0.11	1/14/03 06:19 p		348.0	GAMMA_GS
						5.00E-02		-0.38			g	GER5$1
CS-137	3.32E-04	U	8.1E-03	8.1E-03	1.40E-02	pCi/g		0.02	1/14/03 06:19 p		348.0	GAMMA_GS
						1.00E-01		0.08			g	GER5$1
EU-152	-1.61E-02	U	2.1E-02	2.1E-02	3.45E-02	pCi/g		-0.47	1/14/03 06:19 p		348.0	GAMMA_GS
						1.00E-01		-(1.5)			g	GER5$1
EU-154	6.14E-03	U	2.3E-02	2.3E-02	4.17E-02	pCi/g		0.15	1/14/03 06:19 p		348.0	GAMMA_GS
						1.00E-01		0.53			g	GER5$1
EU-155	-1.94E-03	U	1.7E-02	1.7E-02	2.83E-02	pCi/g		-0.07	1/14/03 06:19 p		348.0	GAMMA_GS
						1.00E-01		-0.23			g	GER5$1

Number of Results: 5

Comments:

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 17-Jan-03

BLANK RESULTS

Lab Name: STL Richland **SDG:** W03926

Lot-Sample No.: J2L120184- **Report No. :** 21506 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 3008420	Work Order:			Report DB ID: FFR5A1AB								
HEXCHROME	2.26E-02	U		0.0E+00	8.00E-02	mg/kg	N/A	0.28	1/11/03		2.5	EPA7196
								N/A			G	

Number of Results: 1

Comments:

1 2

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.

FORM II

Date: 17-Jan-03

LCS RESULTS

Lab Name: STL Richland **SDG:** W03926

Lot-Sample No.: J2L120000-507 **Report No. :** 21506 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2346507	**Work Order:** FEQH61AC			**Report DB ID:** FEQH61CS									
C-14	7.11E+00		2.9E-01	3.9E-01	3.17E-01	pCi/g	100.00%	7.26E+00	2.4E-01	97.99%	12/27/02 07:34 p	5.0	C14_LSC
							Rec Limits:	70.	130.	0.0		G	LSC3

Number of Results: 1

Comments:

STL Richland **Bias** - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V3.97 A97

FORM II

Date: 17-Jan-03

LCS RESULTS

Lab Name: STL Richland **SDG:** W03926

Lot-Sample No.: J2L120000-509 **Report No. :** 21506 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 2346509	**Work Order:** FEQH81AC		**Report DB ID:** FEQH81CM										
CS-137	2.91E-01		5.3E-02	5.3E-02	3.93E-02	pCi/g		2.88E-01	1.3E-02	100.95%	1/14/03 07:31 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.0		g	GER6$1
K-40	2.02E+01		2.6E+00	2.6E+00	3.09E-01	pCi/g		1.95E+01	1.9E+00	103.55%	1/14/03 07:31 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.0		g	GER6$1
RA-226	1.04E+00		1.6E-01	1.6E-01	6.04E-02	pCi/g		1.15E+00	5.2E-02	90.19%	1/14/03 07:31 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	-0.1		g	GER6$1
RA-228	2.10E+00		3.1E-01	3.1E-01	1.20E-01	pCi/g		1.87E+00	9.6E-02	111.95%	1/14/03 07:31 a	200.01	GAMMA_GS
							Rec Limits:	70.	130.	0.1		g	GER6$1
U-238DHP	1.87E+00		8.6E-01	8.6E-01	8.67E-01	pCi/g		1.05E+00	5.4E-02	177.97%	1/14/03 07:31 a	200.01	GAMMA_GS
							Rec Limits:			0.8		g	GER6$1

Number of Results: 5

Comments:

FORM II

Date: 17-Jan-03

LCS RESULTS

Lab Name: STL Richland **SDG:** W03926

Lot-Sample No.: J2L120184- **Report No. :** 21506 **Matrix:** SOIL

Parameter	Result	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3008420	**Work Order:**			**Report DB ID:** FFR5A1QS									
HEXCHROME	3.64E+01			0.0E+00	8.00E-02	mg/kg	N/A	4.00E+01		91.03%	1/11/03	2.5	EPA7196
							Rec Limits:			-0.1		G	

Number of Results: 1

Comments:

FORM II

Date: 17-Jan-03

MATRIX SPIKE RESULTS

Lab Name: STL Richland **SDG:** W03926

Lot-Sample No.: J2L120184-1 **Report No. :** 21506 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2s)	Total Uncert(2s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Exp-ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3008420	Work Order: FEN0R2AN			Report DB ID: FEN0R2NW			Orig Sa DB ID: 9FEN0R20						
HEXCHROME	3.19E+01			0.0E+00	8.00E-02	mg/kg	N/A	76.08%	4.20E+01		1/11/03	2.5	EPA7196
	2.38E-02	RPD	2.0									G	

Number of Results: 1

Comments:

STL Richland
rptSTLRchMs
V3.97 A97

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

Lot Number: J2L120184
Client ID: BHI
Due Date: 1-16-03
QC Batch Number: 2346509
Method Test Parameter: Gamma
Matrix: Soil
SDG Number: WO 3926

Review Item	Yes (√)	No (√)	N/A (√)
A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓	✓	
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?			✓
C. QC & Samples 1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓	✓	
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data 1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?	✓		
5. Were raw counts reviewed for anomalies?			✓
E. Other 1. Are all Nonconformances included and noted? J020161	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response: _____

First Level Review: _____ Date: 1/15-03

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 234509

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Nonconformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: [signature] Date: 1/15/03

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #:	J07061	Classification:	**Anomaly**
NCM Initiated By:	Dale OConnell	Status:	**PMREVIEW**
Date Opened:	01/15/03	Production Area:	Environmental - Prep
Date Closed:	N/A	Tests:	Gamma by GER
		Lot #'s (Sample #'s):	J2L120000 (509); J2L120184 (1)
		QC Batch:	2346509

Nonconformance: Insufficient sample volume for QC
Subcategory: Insufficient sample volume to prepare MS/MSD or duplicate

Problem Description / Root Cause

Name	Date	Description
Dale OConnell	01/15/03	There was insufficient sample volume provided to prepare a duplicate. Client requested U-238DHP at lower abundance, therefor erratic recoveries and higher MDA.

Corrective Action

Name	Date	Corrective Action
Dale OConnell	01/15/03	Precision determination achieved by recounting sample on a different detector. Report results. Report results with recoveries achieved.

Approval History

Name	Date Approved:	Position
Dale OConnell	01/15/03	Group Leader

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
First Level Review

P

Lot Number: J2L120184
Client ID: BHI
Due Date: 1/2/03
QC Batch Number: 2B4607
Method Test Parameter: S3-C14
Matrix: Soil
SDG Number: WB3524

Review Item	Yes (√)	No (√)	N/A (√)
A. COC 1. Is the ICOC page complete (includes all applicable analysts, dates, SOP numbers and revisions)?	✓		
B. QC Batch 1. Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2. Are the QC appropriate for the analysis included in the batch?	✓		
3. Is the Analytical Batch Worksheets complete (includes, as appropriate, volumes, count times, etc.)?	✓		
4. Does the Worksheets include a Tracer Vial label for each sample?	✓		
C. QC & Samples 1. Is the blank result, yield and MDA within contract limits?	✓		
2. Is the LCS result, yield and MDA within contract limits?	✓		
3. Are the MS/MSD results, yields and MDAs within contract limits?			✓
4. Are the duplicate results, yields and MDAs within contract limits?	✓		
5. Are the sample yields and MDAs within contract limits?	✓		
D. Raw Data 1. Were results calculated in the correct units?	✓		
2. Were analysis volumes entered correctly?	✓		
3. Were yields entered correctly?			✓
4. Were spectra reviewed/meet contractual requirements?			✓
5. Were raw counts reviewed for anomalies?	✓		
E. Other 1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Are worksheet entries complete and correct?	✓		

Comments on any "No" response:

First Level Review: Pam Anderson Date: 12-30-02

LS-038A, Rev. 9, 8/02

SEVERN TRENT STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 2346507

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Barbara McKinney Date: 12/30/02

SEVERN TRENT SERVICES

Richland Laboratory
Data Review Check List
METALS

BHI

Work Order Number(s): WO 3926 Batch # 3008420

Lab Sample Numbers or SDG: FENOR

Method/Test/Parameter: Hexavalent Chromium RICHWC 5006 R6

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Initial Calibration				
1. Performed at required frequency with required number of levels?	X			✓
2. Correlation coefficient within QC limits?	X			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within QC limits?	X			✓
4. Initial calibration blank(ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	X			✓
B. Continuing Calibration				
1. CCV analyzed at required frequency and all parameters within QC limits?	X			✓
2. CCB analyzed at required frequency and all results ≤ reporting limit?	X			✓
C. Sample Analysis				
1. Were any samples with concentrations above the linear range for any parameter diluted and reanalyzed?		X		✓
2. Were all sample holding times met?	X			✓
D. QC Samples				
1. All results for the preparation blank below limits?	X			✓
2. MS or MS/MSD recoveries within QC limits and %RPD (for MSD) acceptable?	X			✓
3. LCS percent recovery within QC limits and %RPD (for LCSD) acceptable?	X			✓
4. Analytical spikes within QC limits where applicable?	X			✓
5. ICP only: One serial dilution performed per SDG?			X	✓
6. ICP only: CRDL standard (CRI or CRA) analyzed at required frequency?			X	✓
7. ICP only: Interference check samples (ICSA, ICSAB) and HICAL analyzed at the required frequencies and within QC limits?			X	✓

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
E. Other				
1. Are all nonconformances included and noted? J07035			X	✓
2. Is the correct date and time of analysis shown?	X			✓
3. Did the analyst sign and date the front page of the analytical run?	X			✓
4. Correct methodology used?	X			✓
5. Transcriptions checked?	X			✓
6. Calculations checked at minimum frequency?	X			✓
7. Units checked?	X			✓

Comments on any "No" response:

Analyst: _____ Date: 1-13-03

Second-Level Review: _____ Date: 1-13-03

Form No. CG-191, Rev. 3, 12/01

SEVERN TRENT STL

Data Review Checklist
~~RADIO~~CHEMISTRY
Second Level Review

QC Batch Number: 3008480

Review Item	Yes (√)	No (√)	N/A (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?			✓
3. Are the correct isotopes reported?			✓
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?			✓
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?			
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?			✓
8. Do the MS/MSD results and yields meet acceptance criteria?	✓		
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: Barbara Murphy Date: 1/13/03

Clouseau
Nonconformance Memo

SEVERN TRENT SERVICES

NCM #:	J07035	Classification:	Anomaly
NCM Initiated By:	Dale OConnell	Status:	PMREVIEW
Date Opened:	01/13/03	Production Area:	Classical Chemistry
Date Closed:	N/A	Tests:	7196A
		Lot #'s (Sample #'s):	J2L120184 (1)
		QC Batch:	3008420
Nonconformance:	Batch Result Out of Limits		
Subcategory:	MS/MSD result outside acceptance limits		

Problem Description / Root Cause

Name	Date	Description
Dale OConnell	01/13/03	as well as RPD out of limits. Cause unknown.

Corrective Action

Name	Date	Corrective Action
Dale OConnell	01/13/03	Reanalysis parameters within limits, report results.

Approval History

Name	Date Approved:	Position
Dale OConnell	01/13/03	Group Leader

CHAIN OF CUSTODY

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-030-081	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code / Data Turnaround
Stankovich/Mitchell	Mike Stankovich 531-7620	TRENT, SJ	8L / 21 Days
Project Designation	**Sampling Location**	**SAF No.**	**Air Quality** ☐
100 F Area - Full Protocol	116-F-1 Shallow Zone	B00-030	
Ice Chest No. ERC	**Field Logbook No.** EL-1535-8 / **COA** R116F12000	**Method of Shipment** ~~FedEx~~ Government Vehicle 12-12-02	
Shipped To Severn Trent Incorporated, Richland	**Offsite Property No.** NA	**Bill of Lading/Air Bill No.** NA	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive Tie To B13 DV9

Special Handling and/or Storage

Cool 4C

SAMPLE ANALYSIS Due 1-2-03

SDG W03926

JCL120184

Preservation	None	Cool 4C	None	None	None					
Type of Container	aG	aG	P	aG	P					
No. of Container(s)	1	1	1	1	1					
Volume	60mL	60mL	1000mL	60mL	20mL					
	See item (1) in Special Instructions	Chromium Hex - 7196	See item (2) in Special Instructions.	Strontium-89,90 – Total Sr; Nickel-63; Carbon-14	Activity Scan					

Sample No.	Matrix *	Sample Date	Sample Time									
J00C11 FENOR	SOIL	12-11-02	0830		~	~	~	~				

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
mstankovich	12-11-02 1430	R. Fehlberg R. Fehlberg	12-11-02 1430
R. Fehlberg R. Fehlberg	12-11-02 1430	Cooler ERC 02-904	12-11-02 1430
COOLER ERC 02-904	12/12/02 0930	SJGALE	12/12/02 0930
ERC SJGALE	12/12/02 1030	STL 400 FM A. Rhinehart	12/12/02 10:30 12/12/02

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Chromium, Lead}; Mercury - 7471 - (CV)
(2) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Personnel not available to relinquish samples from the 3728 Ref# ___ on 12/12/02.
COOLER 02-904

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

ERC Radiological Counting Facility Analysis Report

RCF Number RCF9825 **Sample Date & Time** 11/6/01 1225

Project ID: 116-F-1 **SAF Number:** B00-029 **Date Analyzed** 11/12/01 8:04:

Sample ID: B13DV9

Gamma Energy Analysis

Nuclide		Activity (pCi/g)		Error (pCi/g)	MDC (pCi/g)
Co-60		1.3E+00	+/-	1.6E-01	8.3E-02
Cs-137		1.0E+01	+/-	7.4E-01	8.8E-02
Eu-152		1.7E+01	+/-	9.4E-01	3.3E-01
Eu-154		2.1E+00	+/-	2.9E-01	2.3E-01
Eu-155	<	2.8E-01			2.8E-01
Am-241	<	1.7E-01			1.7E-01

TPH4 TOP

Total GEA (pCi/g)	3.0E+01	+/-	2.1E+00

	Activity (pCi/g)		Error (pCi/g)
Gross Alpha**	N/R	+/-	N/R
Gross Beta	N/R	+/-	N/R

Definitions:

All errors reported at 2 standard deviations.
N/R = no result or analysis not requested. <MDA = Less than detection limit.
All GEA results reported as "<" list the Minimum Detectable Concentration (MDC) value for that radionuclide.
Rounding error may result in the reported total GEA activity differing from the sum of the > MDA GEA values in the second significant digit.

For soils and natural samples, the following applies:

The analysis of U-238 is based on the activity of Pa-234m.
The analysis of Np-237 is based on the activity of Pa-233.
U-238dau is the activity of Pb-214 and Bi-214, short lived daughter products of U-238. Equilibrium between parent and daughter products probably does not exist in disturbed materials.
Th-232dau is the activity of Ac-228, Pb-212, and Tl-208, short lived daughter products of Th-232. Equilibrium between parent and daughter products may not exist in disturbed materials.
Other samples, not containing natural materials, may have inapplicable results for the Th, U, transuranics and daughter products. The results must then be balanced for the gross alpha analysis.
**The gross alpha results are not corrected for mass absorbtion
No peaks for this radionuclide were visible above background in the spectrum. The result was reported as less than MDC.

Analyst _____ 11/13/01
C. W. Landes

Report To	Fax
Mike Stankovich	521-8001
Joan Kessner	372-9487

Report Printed: Tuesday, November 13, 2001

SEVERN TRENT SERVICES

Sample Check-in List

Date/Time Received: 12/12/02 @ 10:30 AR

Client: BHE SDG #: W03926 NA [ ] SAF #: B00-030 NA [ ]

Work Order Number: J2L120184 Chain of Custody # B00-030-081

Shipping Container ID: ERC Air Bill # N/A

1. Custody Seals on shipping container intact? NA [ ] Yes [X] No [ ]
2. Custody Seals dated and signed? NA [ ] Yes [X] No [ ]
3. Chain of Custody record present? Yes [X] No [ ]
4. Cooler temperature: <4°C NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [X]
6. Number of samples in shipping container: 4
7. Sample holding times exceeded? NA [X] Yes [ ] No [ ]
8. Samples have:
   - [X] tape
   - [X] custody seals
   - [X] hazard labels
   - [X] appropriate samples labels
9. Samples are:
   - [X] in good condition
   - [ ] broken
   - [ ] leaking
   - [ ] have air bubbles

   (Only for samples requiring head space)
10. Sample pH taken? NA [X] pH<2 [ ] pH>2 [ ]
11. Sample Location, Sample Collector Listed? * Yes [X] No [ ]
    *For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No [X]
13. Description of anomalies (include sample numbers): _____

Sample Custodian: April Rhodes / Richard Date: 12/12/02

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[ ] No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/01, Rev. 4

12/12/2002 4:30:33 PM

Sample Preparation/Analysis

Balance Id: FB 3001-5

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
5I CLIENT: HANFORD

PRIORITY

Pipet #: N/A

Report Due: 01/02/2003 W03926

Sep1 DT/Tm Tech:

Batch: 2346509 SOIL pCi/g

PM, Quote: BG2, 27038

Sep2 DT/Tm Tech:

SEQ Batch, Test: None (9)

Prep Tech: MB

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FEN0R-1-AF										
J2L120184-1-SAMP	351.8					5200	600	G4	12/19 0510	12/18/2002 MP
12/11/2002 08:30		AmtRec: 2X60G,LP,20ML	#Containers: 4			Scr Rst:	Alpha: 1.78E+01 pCi/g		Beta: 5.82E+01 pCi/g	
2 FEN0R-1-AL-X										
J2L120184-1-DUP	351.8							G8	1700	12/19 MS
12/11/2002 08:30		AmtRec: 2X60G,LP,20ML	#Containers: 4			Scr Rst:	Alpha: 1.78E+01 pCi/g		Beta: 5.82E+01 pCi/g	
3 FEQH8-1-AA-BX										
J2L120000-509-MBLK	348.0	OSBIC						G5 G6	1/14 0419	1/14/2003 MD
12/11/2002 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:		Beta:	
4 FEQH8-1-AC-CM										
J2L120000-509-MLCS	200.01	CAL 491						G6	1737	1/14/03 S
~~12/11/2002 08:30~~		AmtRec:	#Containers: 1			Scr Rst:	Alpha:		Beta:	

MS: 12/18/02

Comments: Re count dup on different detector. FEN0R MB 12/18/02

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FEN0R1AF-SAMP Constituent List:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

FEQH81AA-MBLK:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:						

FEQH81AC-MLCS:

Sample Preparation/Analysis

AX Gamma PrpRC5013/5017
TA Gamma by HPGE
51 CLIENT: HANFORD

PRIORITY

Report Due: 01/02/2003

Batch: 2346509 pCi/g

SEQ Batch, Test: None

Balance Id:

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
Cs-137 RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	K-40	RDL:--	pCi/g	LCL:70	UCL:130	RPD:35
Ra-226 RDL:0.1	pCi/g	LCL:70	UCL:130	RPD:35	RA-228	RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35
RA-228DA RDL:0.2	pCi/g	LCL:70	UCL:130	RPD:35	U-238	RDL:	pCi/g	LCL:70	UCL:130	RPD:35

FEN0R1AF-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEQH81AA-MBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEQH81AC-MLCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

1/15/03 4:12:49 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/16/02, 1/16/03, Batch: '2346509', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
2346509						
AC		CalcC	HARBINSOND	12/16/02 12:21:09 PM		
SC			WagarR	IsBatched	12/12/02 4:30:28 PM	ICOC_RADCALC v4.5.3.2
SC			HARBINSOND	InPrep	12/16/02 12:21:09 PM	RICH-RC-5017 REVISION 3
SC			BELSITOB	Prep1C	12/18/02 8:40:28 AM	RICH-RC-5013 REVISION 4
SC			BELSITOB	Prep1C	12/18/02 8:40:32 AM	RICH-RC-5017 REVISION 3
SC			BlackCL	InCnt1	12/18/02 9:07:50 AM	RICH-RD-0007 REVISION 3
SC			BlackCL	CalcC	1/15/03 2:18:14 PM	RICH-RD-0007 REVISION 3
AC			BELSITOB	12/18/02 8:40:28 AM		
AC			BELSITOB	12/18/02 8:40:32 AM		
AC			BlackCL	12/18/02 9:07:50 AM		
AC			BlackCL	1/15/03 2:18:14 PM		

32

AC: Accepting Entry; SC: Status Change

12/12/2002 4:30:32 PM

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

5S C-14 Prp/SepRC5022
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

PRIORITY

Balance Id: 029
Pipet #: NA

Report Due: 01/02/2003 W039Q0

Sep1 DT/Tm Tech: 12-26-02 DM

Batch: 2346507 SOIL pCi/g PM, Quote: BG2, 27038

Sep2 DT/Tm Tech: NA

SEQ Batch, Test: None All Tests: 2346507 5SS3, 2346508 AFS4, 2346509 AXTA, 2346510 CHTH, 2346512 DWEA, 2346520 88OV,

Prep Tech: 1

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FEN0R-1-AG								
J2L120184-1-SAMP								
12/11/2002 08:30	AmtRec: 2X60G,LP,20ML	#Containers: 4	Scr Rst:	Alpha: 1.78E+01 pCi/g	Beta: 5.82E+01 pCi/g			
2 FEN0R-1-AH-X								
J2L120184-1-DUP								
12/11/2002 08:30	AmtRec: 2X60G,LP,20ML	#Containers: 4	Scr Rst:	Alpha: 1.78E+01 pCi/g	Beta: 5.82E+01 pCi/g			
3 FEQH6-1-AA-B								
J2L120000-507-BLK								
12/11/2002 08:30	AmtRec:	#Containers: 1	Scr Rst:	Alpha:	Beta:			
4 FEQH6-1-AC-C								
J2L120000-507-LCS								
12/11/2002 08:30	AmtRec:	#Containers: 1	Scr Rst:	Alpha:	Beta:			
5 FEQH6-1-AD-BN								
J2L120000-507-IBLK								
12/11/2002 08:30	AmtRec:	#Containers: 1	Scr Rst:	Alpha:	Beta:			
6 FEQH6-1-AE-BN								
J2L120000-507-IBLK								
12/11/2002 08:30	AmtRec:	#Containers: 1	Scr Rst:	Alpha:	Beta:			

Sample Preparation/Analysis

PRIORITY

5S C-14 Prp/SepRC5022
S3 Carbon-14 by Liquid Scint
5I CLIENT: HANFORD

Balance Id: 029
Pipet #: _____
Sep1 DT/Tm Tech: 12-26-02
Sep2 DT/Tm Tech:
Prep Tech:

Report Due: 01/02/2003

Batch: 2346507 pCi/g

SEQ Batch, Test: None

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FEN0R1AG-SAMP Constituent List:
C-14 RDL:50 pCi/g LCL:70 UCL:130 RPD:35
FEQH61AA-BLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:
FEQH61AC-LCS:
C-14 RDL:50 pCi/g LCL:70 UCL:130 RPD:35
FEQH61AD-IBLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:
FEQH61AE-IBLK:
C-14 RDL:50 pCi/g LCL: UCL: RPD:

FEN0R1AG-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEQH61AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEQH61AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEQH61AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEQH61AE-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

12/30/02 2:27:22 PM

ICOC Fraction Transfer/Status Report

ByDate: 11/30/02, 12/31/02, Batch: '2346507', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting			Comments
2346507							
AC			**CalcC**	**HARBINSOND**	12/16/02 12:14:05 PM		
SC				WagarR	IsBatched	12/12/02 4:30:28 PM	ICOC_RADCALC v4.5.3.2
SC				HARBINSOND	InPrep	12/16/02 12:14:05 PM	RICH-RC-5013 REVISION 4
SC				HARBINSOND	Prep1C	12/16/02 12:14:24 PM	RICH-RC-5013 REVISION 4
SC				McDowellD	Sep1C	12/27/02 11:15:31 AM	RICH-RC-5022 REVISION 3
SC				BlackCL	InCnt1	12/27/02 11:58:58 AM	RICH-RD-0001 REVISION 2
SC				BlackCL	CalcC	12/28/02 7:48:54 AM	RICH-RD-0001 REVISION 2
AC				**HARBINSOND**	12/16/02 12:14:24 PM		
AC				**McDowellD**	12/27/02 11:15:31		
AC				**BlackCL**	12/27/02 11:58:58		
AC				**BlackCL**	12/28/02 7:48:54 AM		

35

AC: Accepting Entry; SC: Status Change

PRIORITY

SEVERN TRENT SERVICES

*** RE-ANALYSIS REQUEST ***

DUE DATE 1-10-02

CUSTOMER BHI

ANALYSIS Cr^{+6}

MATRIX Soil

LOT NUMBER J2L120184

SAMPLE DELIVERY GROUP W/O 3926

OLD BATCH NUMBER 2346512

NEW BATCH NUMBER 3008420

LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1) FEND-1-AA	MS Failed
2) -1-AN	Dups out
3) -1-AP	
4) -1-AQ	
5)	
6)	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	
LAB QC ID	Assigned with new batch.

1/8/03 6:10:49 PM

Sample Preparation/Analysis

127642, BECHTEL HANFORD, INC.
Bechtel Hanford, Inc.

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

PRIORITY

Balance Id:
Pipet #: _____
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Report Due: 01/10/2003

Batch: 3008420 **SOIL** **mg/kg** **PM, Quote: BG2, 27038**

SEQ Batch, Test: None

WO 3926

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date
1 FEN0R-2-AA J2L120184-1-SAMP 12/11/2002 08:30		AmtRec: 2X60G,LP,20ML	#Containers: 4			Scr Rst:	Alpha: 1.78E+01 pCi/g		Beta: 5.82E+01 pCi/g	
2 FEN0R-2-AN-S J2L120184-1-MS 12/11/2002 08:30		AmtRec: 2X60G,LP,20ML	#Containers: 4			Scr Rst:	Alpha: 1.78E+01 pCi/g		Beta: 5.82E+01 pCi/g	
3 FEN0R-2-AP-X J2L120184-1-DUP 12/11/2002 08:30		AmtRec: 2X60G,LP,20ML	#Containers: 4			Scr Rst:	Alpha: 1.78E+01 pCi/g		Beta: 5.82E+01 pCi/g	
4 FEN0R-2-AQ-S J2L120184-1-MS 12/11/2002 08:30		AmtRec: 2X60G,LP,20ML	#Containers: 4			Scr Rst:	Alpha: 1.78E+01 pCi/g		Beta: 5.82E+01 pCi/g	
5 FFR5A-1-AA-B J3A080000-420-BLK 12/11/2002 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:		Beta:	
6 FFR5A-1-AC-C J3A080000-420-LCS 12/11/2002 08:30		AmtRec:	#Containers: 1			Scr Rst:	Alpha:		Beta:	

Sample Preparation/Analysis

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Report Due: 01/10/2003

Batch: 3008420 mg/kg

SEQ Batch, Test: None

Balance Id:

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech:

Work Order, Lot, Sample DateTime	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	QC Vial 2 Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date

Comments:

All Clients for Batch:
127642, BECHTEL HANFORD, INC. Bechtel Hanford, Inc. , BG2, 27038

FEN0R2AA-SAMP Constituent List:

FEN0R2AN-MS Constituent List:

FEN0R2AQ-MS:

FFR5A1AA-BLK:

FFR5A1AC-LCS:

FEN0R2AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEN0R2AN-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FEN0R2AQ-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFR5A1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
FFR5A1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

ICOC Fraction Transfer/Status Report

ByDate: 12/14/02, 1/14/03, Batch: '3008420', User: *All Order by BatchNbr,WorkOrderNbr,DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3008420						
AC		Sep1C	SturdevantC	1/9/03 10:57:49 AM		
SC			OConnellD	IsBatched	1/8/03 6:10:47 PM	ICOC_RADCALC v4.5.3.2
SC			SturdevantC	InSep1	1/9/03 10:57:49 AM	RICH-WC-5005 REVISION6
SC			SturdevantC	Sep1C	1/11/03 5:09:20 PM	RICH-WC-5005 REVISION 5
AC			SturdevantC	1/11/03 5:09:20 PM		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 2

ICOCFractions

SEVERN TRENT SERVICES

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel 314 298 8566
Fax 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. 100H AREA FULL

B00-030

Lot #: F2L130332
SDG #: W03926

Joan Kessner

Bechtel Hanford, Inc.
3190 George Washington Way
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

MARTI WARD
Project Manager

December 30, 2002

SEVERN TRENT SERVICES

STL St. Louis

CASE NARRATIVE

Bechtel Hanford Incorporated
3190 George Washington Way
Richland, Washington 99352
December 30, 2002

Attention: Joan Kessner

Project Number	:	40232
SAF	:	B00-030
SDG	:	W03926
Number of Samples	:	one
Sample Matrix	:	Soil
Data Deliverable	:	Summary
Date SDG Closed	:	December 12, 2002

II. Introduction

On December 13, 2002, one (1) "soil" sample was received by STL--St. Louis for chemical analysis. The sample was received at the St. Louis lab within temperature criteria. Review the COC and CUR forms for variations in sample condition or temperature upon arrival at the lab. See the attached Sample Summary form for the Lab ID's and corresponding Client Ids.

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. This report is incomplete without the Case Narrative. Results are reported "as received"; i.e. wet weight, unless otherwise noted on the data sheets.

Analyses requested: see attached Method Summary Sheet

Deviation from Request: metals run by 6010B instead of 6010A

IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank
QCLCS- Quality Control Laboratory Control Sample, Blank Spike
MS- Matrix Spike.
DUP- Matrix Duplicate
MSD- Matrix Spike Duplicate.

SEVERN TRENT SERVICES

STL St. Louis

V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

Metals: A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There were no comments or non-conformances associated with this data.

I certify that this Summary is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:

Marti Ward

Marti Ward
St. Louis Project Manager

SAMPLE SUMMARY

F2L130332

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
FETMH	001	J00C11	12/11/02	08:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F2L130332

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Mercury in Solid Waste (Manual Cold-Vapor)	SW846 7471A	SW846 7471A
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3050B

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 12/13/02
Page 1 CLIENT ANALYSIS SUMMARY Time: 15:19:42
STL St. Louis User Id.: AKERSK

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 40232
PROJECT MANAGER: MARTI WARD LAB ID: F-2L130332-001
PROJECT #: 100H AREA FULL WORK ORDER: FETMH
REPORT TO: Joan Kessner RECEIVING DATE: 12/12/02
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 12/11/02
SITE: B00-030 ANALYTICAL DUE DATE: 12/31/02N
AMOUNT REC"D: 60G,20ML REPORT DUE DATE: 1/03/03
STORAGE LOC: S23 PRIORITY: 18
LOT COMMENTS: Sample control: Use Richland receipt da SAMPLING TIME: 8:30
MATRIX: SOLID RECEIVING TIME: 10:00
USAF MATRIX:
SAMPLE ID: J00C11
QC PACKAGE: Special Report - see checklist SDG# : WO3926
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Soils MT6010_S AS,CR,PB (A-46-QM-01) FETMH Protocol: A QC Program: STANDARD TEST SET	06	12/13/02	0/00/00	6/09/03
Mercury (7471A, Cold Vapor) - Solids METALS, TOTAL (Method Exclusive) - Solids M7471_S HG (A-70-09-01) FETMH Protocol: A QC Program: STANDARD TEST SET	06	12/13/02	0/00/00	1/08/03
RAD SCREEN IN-HOUSE RAD SCREEN (A-RA-ZV-01) FETMH-1-AF Protocol: R QC Program: STANDARD TEST SET	06	12/13/02	0/00/00	12/11/02

% moisture added 12.16.02
MW

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 12/13/02
Page 1 CLIENT ANALYSIS SUMMARY Time: 15:19:42
STL St. Louis User Id.: AKERSK

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 40232
PROJECT MANAGER: MARTI WARD LAB ID: F-2L130332-001-D
PROJECT #: 100H AREA FULL WORK ORDER: FETMH MSD
REPORT TO: Joan Kessner RECEIVING DATE: 12/12/02
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 12/11/02
SITE: B00-030 ANALYTICAL DUE DATE: 12/31/02N
AMOUNT REC"D: 60G,20ML REPORT DUE DATE: 1/03/03
STORAGE LOC: S23 PRIORITY: 18
LOT COMMENTS: Sample control: Use Richland receipt da SAMPLING TIME: 8:30
MATRIX: SOLID RECEIVING TIME: 10:00
USAF MATRIX:
SAMPLE ID: J00C11
QC PACKAGE: Special Report - see checklist SDG# : WO3926
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace)	06	12/13/02	0/00/00	6/09/03

METALS, TOTAL - Soils
MT6010_S AS,CR,PB
(A-46-QM-01) FETMH Protocol: A QC Program: STANDARD TEST SET

Hg added
12-16-02
mw

PSL20300 SEVERN TRENT LABORATORIES, INC Run Date: 12/13/02
Page 1 CLIENT ANALYSIS SUMMARY Time: 15:19:42
STL St. Louis User Id.: AKERSK

CLIENT: 127642 BECHTEL HANFORD, INC. QUOTE/SAR #: 40232
PROJECT MANAGER: MARTI WARD LAB ID: F-2L130332-001-S
PROJECT #: 100H AREA FULL WORK ORDER: FETMH MS
REPORT TO: Joan Kessner RECEIVING DATE: 12/12/02
P.O. NUMBER: MRC-SBB-A-19981 SAMPLING DATE: 12/11/02
SITE: B00-030 ANALYTICAL DUE DATE: 12/31/02N
AMOUNT REC"D: 60G,20ML REPORT DUE DATE: 1/03/03
STORAGE LOC: S23 PRIORITY: 18
LOT COMMENTS: Sample control: Use Richland receipt da SAMPLING TIME: 8:30
MATRIX: SOLID RECEIVING TIME: 10:00
USAF MATRIX:
SAMPLE ID: J00C11
QC PACKAGE: Special Report - see checklist SDG# : WO3926
SAMPLE COMMENTS:

Beginning Depth: .00 **Ending Depth:** .00

***** ANALYSIS *****	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Inductively Coupled Plasma (6010B Trace) METALS, TOTAL - Soils MT6010_S AS,CR,PB (A-46-QM-01) FETMH	06	12/13/02	0/00/00	6/09/03

Protocol: A QC Program: STANDARD TEST SET

Hg added
MW
12-16-02

LOT# F2L130332

CWC 5354

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-030-081	Page 1 of 1
Collector: Stankovich/Mitchell	Company Contact: Mike Stankovich; Telephone No.: 531-7620	Project Coordinator: TRENT, SJ	Price Code: 8L; Data Turnaround: 21 Days
Project Designation: 100 F Area - Full Protocol	Sampling Location: 116-F-1 Shallow Zone	SAF No.: B00-030	Air Quality ☐
Ice Chest No.: ERC 99-026	Field Logbook No.: EL-1535-8; COA: R116F12000	Method of Shipment: FedEx	
Shipped To: Severn Trent Incorporated, ~~Richland~~ St Louis (Ref. 12-12-02)	Offsite Property No.: A030 098	Bill of Lading/Air Bill No.: 7919 9414 2560	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive: Tie To B13D19

Special Handling and/or Storage: None

W03926

SAMPLE ANALYSIS

Preservation	None	Cool 4C	None	None	None					
Type of Container	aG	aG	P	aG	P					
No. of Container(s)	1	1	1	1	1					
Volume	60mL	60mL	1000mL	60mL	20mL					
	See item (1) in Special Instructions.	Chromium Hex - 7196	See item (2) in Special Instructions.	Strontium-89,90 -- Total Sr; Nickel-63; Carbon-14	Activity Scan					
Sample No.	Matrix *	Sample Date	Sample Time							
J00C11	SOIL	12-11-02	0830	✓						

12-12-02

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
mstankovich	12-11-02 1430	R. Fahlberg	12-11-02 1430
R. Fahlberg R. Fahlberg	12-11-02 1430	ERC Cooler # 02-404	12-11-02 1430
ERC Cooler # 02-404	12-12-02 1000	R. Fahlberg R. Fahlberg	12-12-02 1000
R. Fahlberg R. Fahlberg	12-12-02 1400	Fed Ex	
Fed Ex		[illegible]	12-13-02 0900

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010A (Supertrace) (Arsenic, Chromium, Lead); Mercury - 7471 - CV)
(2) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

Matrix *: S=Soil; SE=Sediment; SO=Solid; SL=Sludge; W=Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; V=Vegetation; X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (03/01/2002)

3TL St. Louis

STL . St . Louis

Contractor	OFF-SITE PROPERTY CONTROL	CONTROL NO. (To be obtained from PROPERTY MANAGEMENT)
BHI-HANFORD		17030 098

PART I - TO BE COMPLETED BY ORIGINATOR

Department: ~~Engineering Support~~ Field Analytical Support ~~Field Sampling Support~~

The following items are to be shipped from ☒ Contractor ☐ Vendor

Routing FED EX ☒ Prepaid ☐ Collect

Shipped to	SEVERN TRENT INC.	Off-site Custodian	
Company	13715 RIDER TRAIL NORTH		
Address	EARTH CITY, MO 63045	On-site Custodian	HID
City	ATTENTION: MARTI WARD State Zip Code		
Country	(314) 298-8566		

Qty.	Property No.	Description (include Manufacture Name, Model, Serial No.)	Acquisition Cost
1 of 1	4 165	ERC 99-026 Air Bill # 7919 9414 2560 SAF B00-030	1 total

☐ Classified ☒ Unclassified ☐ Shipped Under DOE Contract ☐ Shipped Under Contractor's Use Permit Contract

Necessity for the off-site use of this property

☐ Required for Project Work. List Project No. _____

☐ Business Trip

☐ Off-site Assignment

☐ Shipment to Subcontractor. List Subcontract No. _____

☐ Other *(Please specify)*

ENVIRONMENTAL SAMPLES PACKAGED IN POLYCOOLER WITH ~~WET ICE AND DRY SORB~~ Packing Peanuts

CERTIFICATION OF THE RADIATION MONITORING RELEASE MUST BE SECURED THE SAME DAY THAT MATERIAL IS DELIVERED TO SHIPPING.

RM Clearance for Public Release	RM Survey No.	Date
NA	NA	

Location of and Contact for Property *(Name/Phone No./Bldg./Area)*

Bob Fahlberg ~~RIKKI THOREN/521-8003~~/3728 BUILDING/300 AREA

Date Ready for Shipment	Cost Code to be Charged	Approximate Date This Property will be Returned
12-12-02	R116F12000	

Originated By	Date	Authorized By	Date
R. Fahlberg	12-12-02		
Property Representative Signature	**Date**	**Property Management Approval**	**Date**
R. Fahlberg	12-12-02		

PART II - TO BE COMPLETED BY SHIPPING

Authorized Shipping Signature	Date
C.R. Hahn	12-12-02

PRIORITY OVERNIGHT — Friday Delivery

LOT# F2L130332

A-6003-091 (03/01)

SEVERN TRENT SERVICES

Lot No.: F2L130332
W03926

Condition Upon Receipt Form
St. Louis Laboratory

Client: Richland
Quote No: 40232
Shipper/No: FedX below

Date: 12.13.02 Time: 0908
Initiated by: SH
COC/RFA Numbers: below

Condition/Variance (Circle "Y" for yes and "N" for no. If "N" is circled, see notes for explanation):

1.	(Y) N	Sample received in undamaged condition.	5.	(Y) N	Sample volume sufficient for analysis.
2.	(Y) N	Sample received within 4°C ± 2°C*	6.	(Y) N	Sample received with Chain of Custody.
		Record temperature: 2°, 3°, 3°, 2°, 4°	7.	(Y) N	Chain of Custody matches sample IDs on containers.
3.	(Y) N N/A	Sample received with proper pH**.	8.	(Y) N	Custody seal received intact and tamper evident on cooler.
4.	(Y) N	Sample received in proper containers.	9.	(Y) N	Custody seal received intact and tamper evident on bottles.

* **Temperature Variance Does Not Affect the Following Analyses:** _____

** **For DOE-AL (Pantex, LANL, Sandia, Timet) sites, remember to pH all containers received, except for VOA, TOX, and soils.**

Notes:
7927908723 95 — 503-012-15, 11
7912532502 3 — W03-011-119, 305,
7927908723 62 — W03-012-45, 37, 49, 41, 29, 30, 25
7912532509 8 — B08-030-081 ✓
7912532503 2
7919941429 60 ✓

Corrective Action:

- ☐ Client's Name: _____ Informed verbally on: _____ By: _____
- ☐ Client's Name: _____ Informed in writing on: _____ By: _____
- ☐ Sample(s) processed "as is". _____
- ☐ Sample(s) on hold until: _____ If released, notify: _____

Sample Control Supervisor (or designate) Review: [signature] Date: 12-13-02

Project Management Review: Mulard Date: 12-16-02

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIALS AND THE DATE NEXT TO THAT ITEM

METALS

BECHTEL HANFORD, INC.

Client Sample ID: J00C11

TOTAL Metals

Lot-Sample #...: F2L130332-001 Matrix.....: SOLID
Date Sampled...: 12/11/02 Date Received..: 12/12/02
% Moisture.....: 5.5

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 2351204						
Arsenic	2.7	1.1	mg/kg	SW846 6010B	12/17-12/19/02	FETMH1AD
		Dilution Factor: 1		MDL.....: 0.10		

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F2L130332 **Matrix.....:** SOLID
Date Sampled...: 12/11/02 **Date Received..:** 12/12/02

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F2L130332-001 **Prep Batch #...:** 2351204									
								% Moisture.....: 5.5	
Arsenic									
	2.7	212	210	mg/kg	98		SW846 6010B	12/17-12/19/02	FETMH1AJ
	2.7	212	212	mg/kg	99	0.73	SW846 6010B	12/17-12/19/02	FETMH1AK

Dilution Factor: 1

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F2L130332 **Matrix.....:** SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F2L170000-204 **Prep Batch #...:** 2351204						
Arsenic	ND	1.0	mg/kg	SW846 6010B	12/17-12/19/02	FE0QR1AC
Dilution Factor: 1						

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: F2L130332 **Matrix.....:** SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Arsenic	197	208	mg/kg	106	SW846 6010B	12/17-12/19/02	FE0QR1AF

Dilution Factor: 1